

**CENTER FOR HEALTH  
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**TECHNICAL NOTE:**  
**COMPARISON OF METHODOLOGIES BETWEEN  
TOTAL HEALTH CARE EXPENDITURES AND  
STATE HEALTH EXPENDITURE ACCOUNTS**

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## EXECUTIVE SUMMARY

This Technical Note discusses the differences between two distinct measures of state-level health care spending: Total Health Care Expenditures (THCE) and State Health Expenditure Accounts (SHEA). THCE is calculated and publicly reported annually by the Center for Health Information and Analysis (CHIA), whereas SHEA is published every five years by the Centers for Medicare and Medicaid Services (CMS).

THCE and SHEA are each constructed to support their different intended uses. THCE is a Massachusetts-specific measure and is not intended to be compared with other states. The primary purpose of THCE is to have an accurate, timely and actionable measure to monitor health care cost growth in Massachusetts and to identify the extent to which the Commonwealth has met its cost containment goals. In contrast, SHEA is designed for cross-state comparisons. Accordingly, it is essential for SHEA to have a consistent set of components that utilize the same methodology and data sources for all states over time.

The primary source for THCE is data reported annually by private and public payers directly to CHIA; SHEA is built upon the U.S. Census Bureau's quinquennial Economic Census and industry surveys, supplemented by claims and budget data from public programs. Both THCE and SHEA measure spending for hospital inpatient and outpatient care, professional/physician services, pharmacy, durable medical equipment and continuing care. Distinct from THCE, SHEA also includes spending for dental services, vision care and over-the-counter medicines. THCE includes the net cost of private health insurance (NCPHI), which is excluded from SHEA.

In Massachusetts in 2012, THCE per capita (\$7,378) was 28.3% lower than the CHIA estimated 2012 SHEA per capita (\$10,283). Excluding NCPHI, 2012 THCE per capita (\$7,073) was 31.2% lower than the CHIA estimated 2012 SHEA per capita. The difference between THCE and SHEA may be explained in part by the absence of certain types of services and payers from THCE estimates. Expenditures from certain third-party payers and programs that are not captured by THCE are estimated to account for 11.04% of the difference between THCE and SHEA, followed by 9.46% from out-of-pocket payments for over-the-counter medicines and services not covered by health insurance, and 2.26% from dental insurance. THCE does not include the aforementioned expenditure categories due to lack of data availability. About 8.46% of the difference between THCE and SHEA cannot be itemized.

THCE is a customized measure mandated by the Massachusetts Legislature to monitor health care costs and cost trends in the Commonwealth. Massachusetts was the first in the nation to have a state-specific measure that is compared to a health care cost growth benchmark derived from projections of state economic growth and updated annually. CHIA will continue to work with the health care community and state and federal agencies to enhance the comprehensiveness and timeliness of THCE.

## INTRODUCTION

This technical note describes the differences in methodologies and data sources between two distinct measures of state-level health care spending: (1) Total Health Care Expenditures (THCE), as statutorily defined by the Massachusetts Legislature and calculated annually by the Center for Health Information and Analysis (CHIA); and (2) State Health Expenditure Accounts (SHEA) calculated every five years by the Centers for Medicare and Medicaid Services (CMS).<sup>1</sup>

THCE is a measure of total spending for health care in the Commonwealth of Massachusetts that reflects the total amount paid by or on behalf of Massachusetts residents for health care services. It includes specific health care expenditures for Massachusetts residents from public and private sources, including: (i) all categories of medical expenses and all non-claims related payments from insurers to providers, as included in the health status adjusted total medical expenses (TME) reported by CHIA; (ii) all patient cost-sharing amounts, such as deductibles and copayments<sup>2</sup>; and (iii) the net cost of private health insurance (NCPHI).<sup>3</sup>

For more information on the methodology for calculating THCE, please see CHIA's publication: Massachusetts Total Health Care Expenditure Methodology (December 2013).<sup>4</sup>

SHEA is a subset of the National Health Expenditure Accounts (NHEA), maintained by the National Health Statistics Group in the Office of the Actuary at CMS. SHEA estimates are developed by type of service and by type of payer, and represent a consistent set of estimates that utilize the same methodology for all 50 states and all years.<sup>5</sup> NHEA includes a Personal Health Care component, defined as “the total amount spent to treat individuals with specific medical conditions.”<sup>6</sup> SHEA estimates represent the amount of health care spending from the NHEA Personal Health Care component attributed to each state. There are two types of SHEA: (1) by state of provider and (2) by state of residence. SHEA by state of provider includes spending estimates for each state based on total revenues received by health care providers in a state for delivering health care goods and services to both residents and non-residents. SHEA by state of residence provides spending estimates for all health care expenditures made by, or on behalf of, the residents of a state, regardless of whether the care is provided in-state or out-of-state. SHEA estimates of spending by state of residence are used for comparisons of per capita spending across states.

This technical note discusses THCE and SHEA by state of residence since THCE measures total spending of Massachusetts residents.

1 SHEA is published every 5 years by CMS. The most current SHEA was released in December 2011 for data years 2005-2009.

2 Patient cost-sharing amounts are included in the TME data.

3 NCPHI captures the costs to Massachusetts residents associated with the administration of commercial health insurance. This includes the costs associated with commercial administration of public programs such as Medicaid Managed Care Organizations.

4 Center for Health Information and Analysis (2013). Massachusetts Total Health Care Expenditure Methodology. Available at: <http://www.mass.gov/chia/docs/r/pubs/13/thce-methodology.pdf> (Accessed: September 5, 2014)

5 Centers for Medicare and Medicaid Services (2011). State Health Expenditure Accounts, 1991-2009: Converting Estimates from State of Provider to State of Residence. Available at: <http://www.cms.gov/Research-Statistics-Data-and-Systems/Statistics-Trends-and-Reports/NationalHealthExpendData/Downloads/res-methodology.pdf> (Accessed: September 12, 2014)

6 In NHEA, the Personal Health Care component excludes expenditures for government administration, the net cost of private health insurance, government public health activities, investment in research, and structures and equipment. Please see CMS's National Health Expenditures Accounts: Methodology Paper, 2012. Available at: <http://www.cms.gov/Research-Statistics-Data-and-Systems/Statistics-Trends-and-Reports/NationalHealthExpendData/Downloads/dsm-12.pdf> (Accessed: September 12, 2014)

## DIFFERENCE IN TYPES OF PAYERS

THCE includes spending by commercial payers (including both self-insured and fully-insured business), Medicare, MassHealth,<sup>7</sup> patient liabilities for covered services (e.g. deductibles, coinsurance, and copayments), other federal and state spending on health care services, and the administrative costs of commercial insurance (i.e., NCPHI). THCE does not include a variety of other health care expenditures that are typically paid directly by consumers, including expenditures on over-the-counter drugs and spending for services not covered by health insurance (e.g., cosmetic surgeries).<sup>8</sup>

SHEA includes spending by commercial insurers, Medicare and Medicaid, and all other payers (including individuals' out-of-pocket payments, the uninsured, and other federal, state, and local programs). Initially, these calculations are based on the state where the provider is located, and are then converted to reflect consumers' states of residence. In order to convert provider-based spending estimates to state-of-residence estimates, adjustments are made to account for the interstate flows of spending between the location of the provider and the residence of patients. This conversion is based on reported patterns of spending for Medicare beneficiaries, with adjustments made for other payer types to account for differences in services used by non-Medicare populations.<sup>9</sup> Medicaid expenditures, which are reported by state Medicaid agencies to CMS, are not adjusted, although states may pay small amounts for out-of-state services obtained by Medicaid enrollees; however, this represents a nominal amount of total Medicaid spending.

THCE and SHEA both cover expenditures as well as patient cost-sharing amounts from commercial payers, Medicare, and Medicaid. However, SHEA does not include the spending information of NCPHI, while THCE does not include the spending information for services not covered by health insurance, and other public and private revenues. Please see Table 1 for detailed comparisons.

7 MassHealth is Massachusetts' Medicaid program. It is a federal and state joint program that combines Medicaid and the Children's Health Insurance Program, or CHIP, in Massachusetts.

8 Expenditures from standalone dental plans and vision plans are not included. However, expenditures for certain dental services covered by MassHealth or commercial insurance are included in THCE.

9 Medicare data are the primary data source used to adjust the provider data to a state-of-residence basis because Medicare is the only national insurer with publicly available claims data that can be analyzed on both of these dimensions.

**Table 1. Comparison of Payer Types and Data Sources**

Payer Type	THCE (published annually by CHIA)	SHEA (published every 5 years by CMS)
Medicaid and CHIP	Provided by MassHealth	CMS-64 forms that are filed by the State Medicaid Agencies to CMS
Medicaid Managed Care Organization Plans <sup>1</sup>	Annually reported to CHIA by commercial payers	
Medicare FFS (Parts A, B, and D)	Aggregated data provided by CMS to CHIA	Medicare claim data from CMS
Medicare Advantage	Annually reported to CHIA by commercial payers	Annually reported to CMS by managed care plans
Commercial Health Insurance	Annually reported to CHIA by commercial payers	Collectively represented by residual spending from total expenditures of all payers after accounting for Medicare and Medicaid.  Total expenditures of all payers are primarily sourced from U.S. Census Bureau's quinquennial Economic Census.
Out-of-Pocket Payments for Covered Services <sup>2</sup>	Included in the data provided by commercial payers, MassHealth, and Medicare	
Out-of-Pocket Payments for Non-Covered Services <sup>2</sup>	No data	
Uninsured	Only includes payment information provided by the Office of Health Safety Net	
Other Public Programs <sup>3</sup>	Annually reported to CHIA by commercial payers and public sources <sup>4</sup>	
Other Private Revenues <sup>5</sup>	No data/Not Included	
Net Cost of Private Health Insurance	Annually reported by commercial payers to the Massachusetts Division of Insurance (DOI), the National Association of Insurance Commissioners (NAIC), and the Center for Consumer Information and Insurance Oversight (CCIIO)	Not Included

**Notes:**

- Includes Commonwealth Care spending.
- In SHEA, out-of-pocket payments consist of both services and goods covered by insurance and those not covered by insurance.
- In SHEA, other public programs includes Department of Defense (TRICARE), Department of Veterans Affairs, CHIP, worksite health care, Indian Health Services, workers' compensation, state General Assistance programs, Maternal and Child Health grants, vocational rehabilitation, Substance Abuse and Mental Health Services Administration, and school health.  
  
Health care spending on government administration, government public health activities, non-commercial research, and investment in structures and equipment are excluded from SHEA.
- Includes expenditures for the Medical Security Program (MSP) and Veteran Affairs (VA). MSP provides health insurance coverage for Massachusetts residents who are receiving unemployment insurance benefits. The data is reported to CHIA by commercial payers. Health care expenditure data for Massachusetts residents with VA coverage are available from the National Center for Veterans Analysis and Statistics.
- In SHEA, other private revenues include philanthropic funding and other non-patient revenues (e.g. revenues from the operation of gift shops and parking lots and investment income).

## DIFFERENCE IN TYPES OF SERVICES

THCE includes spending for all types of medical expenses covered by a member's health insurance benefits, including, but not limited to, hospital inpatient, hospital outpatient, sub-acute care such as skilled nursing and rehabilitation, professional services (physicians and all other health professionals), pharmacy, mental and behavioral health and substance abuse, home health, durable medical equipment, laboratory, diagnostic imaging, and alternative care such as chiropractic and acupuncture. THCE also includes non-claims based payments to health care providers (e.g., payments for quality or financial performance, infrastructure, and care management).

SHEA includes hospital inpatient and outpatient care, physician and clinical services, freestanding home health care, freestanding nursing home care, other professional services, durable medical products, dental services, drugs and other medical non-durables, and other health, residential, and personal care services (e.g. school health, worksite health care, residential mental health and substance abuse facilities, ambulance services, and other types of health care provided in non-traditional settings).<sup>10</sup> The primary data sources for SHEA are industry and U.S. Census Bureau surveys of providers, supplemented by claims-level and program spending data from CMS, as well as program and budgetary data for other state and federal expenditures.

THCE and SHEA generally cover similar types of services; however, SHEA is a broader measure that includes estimates of all household spending for health services. THCE only contains the spending information for services, medications, and equipment that are covered by health insurance.

10 SHEA adheres to the same service and payer definitions as NHEA. For detailed information on Type of Service, please see National Health Expenditures Accounts: Methodology Paper 2012. Available at: <http://www.cms.gov/Research-Statistics-Data-and-Systems/Statistics-Trends-and-Reports/NationalHealthExpendData/Downloads/dsm-12.pdf> (Accessed: September 10, 2014)

**Table 2. Comparison of Types of Services and Data Sources**

	<b>THCE</b> (published annually by CHIA)	<b>SHEA<sup>1</sup></b> (published every 5 years by CMS)
<b>Hospital Inpatient and Outpatient Care</b>	Annually reported to CHIA by commercial and public payers	American Hospital Association Annual Survey of Hospitals; Economic Census <sup>2</sup> (U.S. Census Bureau)
<b>Physician and Other Clinical Services</b>	Annually reported to CHIA by commercial and public payers	Service Annual Survey and Economic Census (U.S. Census Bureau)
<b>Other Professional Services</b>	Annually reported to CHIA by commercial and public payers	Service Annual Survey and Economic Census (U.S. Census Bureau)
<b>Other Health/Residential/Personal Care</b>	Annually reported to CHIA by commercial and public payers	Service Annual Survey and Economic Census (U.S. Census Bureau); Program or Budget data
<b>Home Health</b>	Annually reported to CHIA by commercial and public payers	Service Annual Survey and Economic Census (U.S. Census Bureau)
<b>Nursing and Continuing Care</b>	Annually reported to CHIA by commercial and public payers	Service Annual Survey and Economic Census (U.S. Census Bureau)
<b>Prescription Drugs</b>	Annually reported to CHIA by commercial and public payers	National Prescription Audit and Method of Payment Report (IMS Health) and Census of Retail Trade <sup>3</sup> (U.S. Census Bureau)
<b>Durable Medical Equipment</b>	Annually reported to CHIA by commercial and public payers	Input-Output Accounts <sup>4</sup> and Consumer Expenditure Survey (Bureau of Economic Analysis)
<b>Dental Services</b>	No data for dental insurance and individual out-of-pocket payments	Service Annual Survey and Economic Census (U.S. Census Bureau)
<b>Vision Care</b>	No data for dental insurance and individual out-of-pocket payments	Service Annual Survey and Economic Census (U.S. Census Bureau)
<b>Over-The-Counter Medicines and Non-Durable Medical Products</b>	No data	Annual Survey of Over-the-Counter Drugs (Kline & Co.)

**Notes:**

1. Includes Medicare data collected from CMS claims, Medicaid data collected from Quarterly Expense Reports (CMS-64 form) and Medicaid Analytic Extract System and Medicaid Statistical Information Statistics
2. Economic Census (U.S. Census Bureau) is available for years ending in 2 and 7
3. Census of Retail Trade (U.S. Census Bureau) is available for years ending in 2 and 7
4. Input-Output Accounts (Bureau of Economic Analysis) are available for years ending in 2 and 7



## DIFFERENCE IN EXPENDITURES

Due to the aforementioned differences in methodologies and data sources, the estimates of total statewide health spending vary between THCE and SHEA. THCE, as reported in CHIA's 2014 Annual Report on the Performance of the Massachusetts Health Care System, represents a final assessment of 2012 THCE, and an initial assessment of 2013 THCE due to an abbreviated run-out period that is insufficient for finalizing claims payments and provider financial settlements, such as performance payments.<sup>11</sup> A final assessment of 2013 THCE will be published in CHIA's 2015 Annual Report.

THCE in 2012 was \$49.0 billion for Massachusetts residents or \$7,378 per capita. After excluding spending related to NCPHI to be more comparable to SHEA, 2012 adjusted THCE was \$47 billion or \$7,073 per capita (Table 3). The most current SHEA estimate of total health care spending for Massachusetts residents was \$61.2 billion or \$9,278 per capita for 2009. Applying the national growth rates from the NHEA 2009-2012 data, the estimated 2012 SHEA for Massachusetts residents was \$68.3 billion or \$10,283 per capita.<sup>12</sup> In comparison, 2012 THCE per capita excluding NCPHI was 31.2% lower than the estimated 2012 SHEA. The difference between THCE and SHEA may be explained in part by the absence of certain expenditure categories that are not included in THCE.

Expenditures from certain third-party payers and programs that are not captured by THCE are estimated to account for 11.04% of the difference between THCE and SHEA, followed by 9.46% from out-of-pocket payments for over-the-counter medicines and services not covered by health insurance,<sup>13</sup> and 2.26% from dental insurance. THCE does not include these expenditure categories due to lack of timely data availability. About 8.46% of the difference (\$5.8 billion) between THCE and SHEA is not itemized.

11 This initial assessment of 2013 THCE incorporated up to four months of claims run-out, and included estimates for claims completion and projected financial settlements. On the other hand, the final assessment of 2012 THCE allowed for at least 12 months of claims run-out and included final settlements for financial and quality performance payments.

12 Although the most current SHEA is for 2009, the national-level data (i.e. the personal health care expenditure component of NHEA) is available for 2012. Therefore, CHIA is able to use the NHEA trends between 2009 and 2012 to estimate the 2012 SHEA.

13 In SHEA, patient cost-sharing amounts are included with other out-of-pocket expenditures that are not covered by health insurance (e.g., over-the-counter medicines). Since THCE includes patient cost-sharing amounts, it is necessary to remove this element from SHEA's out-of-pocket expenditure category. CHIA applied the assumption of 87% average actuarial value for commercial insurance in Massachusetts based on CHIA's 2014 Annual Report to remove the amount equal to 13% of private health expenditures in estimated 2012 SHEA. The remaining dollar amounts in the Out-of-Pocket Payment category contain the expenditures for services and medical goods/equipment not covered by health insurance.

**Table 3. Comparison of Massachusetts Resident Expenditures between THCE and SHEA**

Measure	THCE Excluding NCPHI (2012) <sup>1</sup>	SHEA (2012 estimated)	Difference	% Difference
Total Expenditures	\$47.0 billion	\$68.3 billion	-\$21.3 billion	31.22%
Per Capita Expenditures	\$7,073	\$10,283	-\$3,210	31.22%
Expenditure Components Included in SHEA but Not Included in THCE <sup>2</sup>				%
Other Third Party Payers and Programs	(a) Department of Defense; (b) Worksite Health Care; (c) Other Private Revenues (e.g., philanthropic funding) <sup>3</sup> ; (d) Indian Health Services; (e) Workers' Compensation; (f) Vocational Rehabilitation; (g) Substance Abuse and Mental Health Services Administration; (h) School Health; and (i) Other Federal, State and Local Programs <sup>4</sup>			11.04%
Out-of-Pocket Payments	(a) Out-of-pocket payments for services, medicines and medical products not covered by health insurance			9.46%
Type of Insurance	(a) Dental Insurance			2.26%
Total Itemized Difference between THCE and SHEA				22.76% (\$15.5 billion)
Non-itemized Difference				8.46% (\$5.8 billion)

**Notes:**

1. SHEA does not include the spending of NCPHI. For purpose of comparison, NCPHI is excluded from THCE.
2. The estimated proportion of each expenditure component is based on the dollar amount distribution from the Personal Health Care Expenditure component of 2012 NHEA (the most current data).
3. Include philanthropic funding and other non-patient revenues (e.g. revenues from the operation of gift shops, parking lots and investment income).
4. Include, but is not limited to, pre-existing conditions, insurance plans; temporary disability insurance; and federal, state, and local subsidies to providers.

## CONCLUSION

THCE and SHEA were both developed to calculate total health care spending on a state level. However, these two measures differ considerably in their methodologies, data sources, timing, and intended uses. SHEA is constructed from census and industry surveys, and supplemented with information from government program and budget reports and Medicare claims. The majority of the data sources for SHEA are collected only every few years, and the spending estimates are first developed for national totals and then attributed to the states for each type of service. As a result, the most current SHEA data, published in 2011, is for calendar year 2009. The purpose of SHEA differs from THCE, as SHEA is intended to be a metric that allows for a standard comparison of health care expenditures across different states.

THCE, in contrast, is intended to monitor year-over-year trends in health care spending for Massachusetts residents and to compare the rate of growth against the health care cost growth benchmark, as outlined in Chapter 224 of the Acts of 2012. This requires timely, relevant, and actionable data specific to the Massachusetts health care system. Toward that end, THCE is sourced from data filed directly by health care payers on an annual basis. These data allow for detailed analyses of expenditures by both payers and providers, as mandated by the Legislature. Because of the significant differences, THCE and SHEA are not comparable, and it is important for data users to understand the advantages and limitations of each measure so that they can be used appropriately. Both THCE and SHEA capture valuable health care system data, enabling important policy assessment of health care expenditures and growth trends.

THCE is a customized measure to monitor health care costs and cost trends in Massachusetts. CHIA will continue to work with the health care community and the state and federal agencies to enhance the comprehensiveness and timeliness of THCE.

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